

uate new means of data transfer and documentation between highly diverse databases on national and international levels. This development was especially driven by the global biodiversity initiatives which became politically established.

Plans for better communication and linking of biodiversity information arose and were pushed from institutions independently of database holders and without knowledge of their individual technical and administrative problems.

The new challenge was to develop common standards, technical facilities and the financial background for allowing the linking of decentralized databases.

The world wide web allows decentralized communication by offering nodes wherever technical possibilities are available. It is only because of political reasons that national nodes have been installed and are going to be developed for linking biodiversity information.

The database ZOBODAT has successfully tried to keep pace with these developments. Technical structures have been steadily improved and the aim to increase the data volume has still high priority. A basis was set for the input of all zoological and botanical taxa and for a global geographical reference allowing analysis and documentation of data. With internet suitability, the step for communication with related databases was logically prepared.

The volume of data input is mainly restricted by the time needed for scientifically recording and digitizing the data. Especially the GBIF (Global Biodiversity Information Facility) program deals with these problems common to all scientific biological collections.

Plans and pilot studies for linking biodiversity databases raise especially technical questions and are limited by administrative restrictions of individual databases.

Technical possibilities allowing individual databases to specify and restrict the amount of data made available for common use should help to overcome existing fears of data misuse.

ZOBODAT as well as other biodiversity databases involved in these new communication programs offer their experience for other database holders willing to cooperate.

The pressure of the international community for making biodiversity data globally available increases. Therefore any improvement in the communication between databases is highly recommended. Tools for data analysis and documentation as developed by ZOBODAT could then be available for a much larger community of users.

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Ornithological Databases at some German Natural History Museums

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Abstract. At the moment there is no cataloguing software worldwide that fits all demands for avian collections. Scientists working at three German Natural History Museums report on their cataloguing system and demonstrate their experience. This joint lecture was presented at the symposium to stimulate the discussion on the status and progress in bird collection cataloguing in Europe. Is there any advice that can be given to those that have not started cataloguing yet?

Key words. Cataloguing, avian collections, experience in ornithological cataloguing, Germany

1. INTRODUCTION

Until now there has been no joint initiative for all bird, animal or natural history collections in Germany to develop a cataloguing software for the computerisation of museums and institutes. The same is true on the international level. In this situation several natural history museums and institutes started to develop a cataloguing software on their own. In this joint paper we give an insight into the progress and failure of three large German natural history museums. After reports about the Research Institute Senckenberg, Frankfurt, the Zoological Research Institute and Museum Alexander Koenig, Bonn and the Staatliches Museum für Naturkunde, Stuttgart we discuss the possibility to access data from different databases by means of a common internet platform, i.e. using the software Species Analyst (<http://speciesanalyst.net/>) (TSA, see the paper of PETERSON & NAVARRO-SIGÜENZA, this issue).

2. GERALD MAYR: DATABASES USED AT THE ORNITHOLOGICAL SECTION OF THE RESEARCH INSTITUTE SENCKENBERG

The ornithological section of the Research Institute Senckenberg in Frankfurt has so far entered about 16,000 data sets into the database system Microsoft ACCESS. The entire skeleton and spirit collection (about 4,000 specimens each), and about 8,000 of a total of more than 90,000 skins as well as all newly acquired specimens have been entered into the database. Due to limited personnel capacities, the current entry rate of earlier specimens (which are catalogued on index cards) is rather low: about 2,000 specimens a year. Only those data which are already on index cards are entered into the database, i.e. the name of the taxon, collecting data, locality, and the collector. The locality names are updated, but not verified

against the actual specimen label; coordinates are normally not added. The taxonomy follows PETERS (1931-62). Currently, collection data stored in ACCESS are not available on the internet.

In the course of 2002, a new database system was installed which is especially designed for the Research Institute Senckenberg and is named SESAM (SENckenbergische SAMmlungen, i.e. Senckenbergian collections). The complete information currently stored in ACCESS will be transferred into SESAM, so that none of the current data sets is lost. SESAM will be used by all sections of the Research Institute Senckenberg. Therefore, a large variety of data fields will exist to meet the needs of all sections of the institute. It will then be possible to add digital scans of the original labels, additional fields for the identification history of a given specimen and all loan arrangements of a particular specimen.

SESAM is a relational data base, so that common data sets, like coordinates for a defined locality, will be available to all users and are entered by any person into SESAM only once. Some data, not yet specified, will later on be accessible for external users over the internet.

3. GOETZ RHEINWALD: CATALOGUING AT THE ORNITHOLOGICAL SECTION OF THE ZOOLOGICAL RESEARCH INSTITUTE AND MUSEUM ALEXANDER KOENIG, BONN

In the early 1980s we started with an inventory of the skin collection. Based on the inventory we prepared a card index for each taxon, i.e. to species or subspecies level. As far as time was available we then transferred the data of the labels onto the cards. The skeleton collection as well as the fluid collection have already been on index cards since the end of the 1960s. When about 50 % of all skins were entered onto these cards, the elec-

tronic age started. On the basis of PARADOX, the cataloguing software BIODAT (first version) was developed, and since the beginning of the 1990s cataloguing had to switch from cards to electronic databasing.

We learned to handle a rather difficult cataloguing system and until 1997 we entered another 20 % of the skin collection into BIODAT (first version). Meanwhile, the experts had developed another version of BIODAT which is much easier to handle. The new relational database is linked with several thesauri, one containing the avian system and another geography with coordinates for all localities in the background. It is possible to build up these thesauri by adding taxa and names of locations, but it is more desirable to import both tables from elsewhere.

There are two fundamental disadvantages in the new version of BIODAT. One is that all entries of the labels have to be verified in advance. That means firstly, that the taxon name has to be adjusted to the thesaurus stored in the background. At the moment BIODAT is not able to deal with synonyms. It also means that all localities have to be checked and changed according to the most recent geographical thesauri. It is this second point which does impend the transfer of those 20 %

computerized skins from the first version into the second one, so that all entries between the beginning of the 1990s and 1997 have been lost.

The second „mistake“ is more serious. In the first version we had a master file number for every specimen that connected the different tables in the database. In the second version, the collection number connects the different tables. But for this task the collection numbers have to be in numeric format (numbers only). All labels from the days of Alexander Koenig – we have many thousands of skins from that time – have an alphanumeric format: a combination of Greek and Roman letters, with Arabic and Roman numerals. This means that we would have to change about one third of the collection numbers in the avian skin collection. It is obvious that this will never be done.

At the moment, all computerizing of the collection has been stopped and we are discussing the possibility to start anew with a rather simple system like ACCESS or EXCEL because it is always possible to transfer data from such a simple database to a more sophisticated database, the opposite way being more difficult. It is our feeling that BIODAT is an excellent tool for collection management but not for cataloguing.

The screenshot displays the 'Museumobjekt: Gesamtansicht' window in the IMDAS-Pro software. The interface is divided into several sections:

- Menu Bar:** Datei, Bearbeiten, Recherche, Objekt, Navigation, Ansicht, Stammdaten, Thesaurus, Plug-In, Fenster.
- Toolbar:** Contains various icons for file operations, search, and navigation.
- Left Panel (Navigation Tree):**
 - Konvolut
 - Objektbearbeitung
 - Materialien zum Objekt
 - Literaturhinweise
 - Museumobjekt
 - Objektbearbeitung
 - Spezielle Sammlungsbereiche
 - Sacherschließung
 - Materialien zum Objekt
 - Literaturhinweise
 - Wiss. Dokumentation
 - Geschäftsprozesse
 - Leihverkehr
 - Erhaltung / Präparation
 - Schätzungen
 - Versicherungen
 - Verpackung
 - Ausstellungen
 - Inventur
 - Deakzession
 - Medienobjekt
 - Objektbearbeitung
 - Sacherschließung
 - Literaturhinweise
 - Geschäftsprozesse
 - Erhaltung
 - Bibliographisches Objekt
 - Objektbearbeitung
 - Sacherschließung
 - Materialien zum Objekt
 - Archivale
 - Objektbearbeitung
 - Sacherschließung
 - Materialien zum Objekt

- Main Form Fields:**
- Institution: Staatliches Museum für Naturkunde
- Bereich: Zoologie
- Sammlung: Ornithologie
- Objektbez.: Rabenkrähe
- Taxon: Corvus corone corone
- Typus: (empty)
- Entsteh. zeit: (empty)
- Verfüg.: (empty)
- Publikum: (empty)
- Konvolut: (empty)
- Standort: (empty)
- Inv.Nr.: (empty)
- Status: Registriert
- Registrierung - Eingangsbuch | Inventarisierung | Katalogisierung / Beschreibung | Gesamtansicht | Fundort
- Familie: Corvidae
- Gattung: Corvus
- Art: corone
- Unterart: (empty)
- Schlagworte: (empty)
- Fundort: (empty)
- geograph. Fundort: (empty)
- Gewässer-Flusssystem: (empty)
- historischer Fundort: (empty)
- Fundlokalität: (empty)
- relative Lage: (empty)
- Bemerkungen: (empty text area)
- Typus: (empty)
- Präparat: (empty)
- Geschlecht: (empty)
- biologisches Alter: (empty)
- Breite, Länge von: (empty)
- Bezugssystem: (empty)
- Höhe: (empty)
- Tiefenwert: (empty)
- Stationsnummer: 123
- Eingangsart: (empty)
- Voreigentümer: (empty)
- Konvolut: (empty)
- Finder: (empty)
- Funddatum: (empty)
- Bottom Tabs:** Botanik, Paläontologie, Zoologie.

Fig. 1: Entry mask of IMDAS-Pro®